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[0035] Figs. 3A and 3B show the adaptation to a red illumination,

[0037] Figs. 5A and 5B show the adaptation to a blue illumination, and

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[0049] Figs. 2A and 2B firstly illustrate the adaptation to a white illumination with spectral components of approximately the same energy. The intensity of emission is illustrated in the upper diagram as a function of wavelength. A diffractive hexagonal 3D grating in this case supplies three diffraction orders whose Gaussian spectral transmission curves are centered in relation to $\lambda 111 = 559$ nm (RED), $\lambda 123 = 537$ nm (GREEN) and $\lambda 122 = 447$ nm (BLUE). This corresponds to the sensitivity of the cones in human day vision. The Gaussian curves illustrated in the lower diagram can be described by $a^{-1}\exp(-x^2)$, with $x = (\lambda h1h2h3 - \lambda)/n$ and $a = 0.92$ at $n = 55$ for 111RED, $a = 0.88$ at $n = 53$ for 123GREEN, and $a = 0.56$ at $n = 34$ for 122BLUE. The achromatic, that is to say gray to white, objects reproduce the spectral properties of the illumination in the object space to the extent that this itself is invisible. The product of the spectral intensities and spectral Gaussian curves produce identical brightness aggregate values of 33% each in the three diffraction orders. Their RGB equilibrium supplies the white standard, which centers the trichromiatic color space. In the table below, the values of the spectral brightness distribution are summarized in accordance with the Gaussian curves assigned to the diffraction orders, for the case of a white illumination.

[0050] Figs. 3A and 3B and Fig. 4 illustrate the adaptation to an illumination displaced to the red. The intensity of emission is illustrated once again in the upper image as a function of wavelength, and that of the associated Gaussian spectral transmission curves is illustrated in the lower image of Fig. 3B. The 3D grating optical adaptation to a red illumination leads via a chromatic tuning of the three grating constants at $\lambda 111 = 728$ nm RED, $\lambda 123 = 699$ nm GREEN, $\lambda 122 = 582$ nm BLUE to a new trichromatic RGB equilibrium position which is displaced to the longer wavelength end of the spectrum and forms the new white standard. The product of variable spectral energy distribution in the illuminating light and a constant triple of the

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Gaussian curves results in the new distributions of the spectral brightness values in the RGB diffraction orders, as they are summarized in the following table.

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[0052] Figs. 5A and 5B and Fig. 6 show in a similar way the 3D grating optical adaptation to a blue illumination via a chromatic tuning of the three grating constants at $\lambda 111$ = 513 nm RED, $\lambda 123$ = 492 nm GREEN, $\lambda 122$ = 410 nm BLUE to a new trichromatic RGB equilibrium position, that is displaced to the short-wave end of the spectrum and forms the new white standard. The product of variable spectral energy distribution in the illuminating light and a constant triple of the Gaussian curves results in the new distributions of the spectral brightness values in the RGB diffraction orders, as they are summarized in the following table.